CHEETAL

JOURNAL OF

The Wildlife Preservation Society of India

Dehradun

Vol. 49 October 2010 (July 10 to October10) No.1

Common Tailorbird ***(Orthotomus sutorius)***
Feeding Chicks in her nest tailored in a Banyan leaf
Photo - Bhagat Singh

Published with financial assistance of
WWF-India

Foster Parents

When a bird species puts the responsibilities of nest building, incubation and rearing of its chicks on to another species it is known as a parasitic bird, The species that performs the above duties, is known as a foster bird or a foster parent. The koel is a classic example of a parastic bird, while the house crow is an example of a foster parent. The koel is not the only parasitic bird. The cuckoo family has this peculiarity all over the world, with a few exceptions.

Varied species of birds are selected as foster parents. It is rather strange that majority of the foster birds are smaller in size than the parasitic birds. The difference in size becomes glaring in the case of the Himalayan Cuckoo and various leaf- warblers.The latter are less than one third the size of the former.

The parasific bird (koel) and the foster parent (House crow)
Photo - Bhagat Singh

Editorial

Planet Earth has been very cautiously nurturing all life forms that take birth in its lap and that is precisely why we call it mother earth. Apart from the external factors its own creatures have been responsible for extermination of several species of plants and animals from its face. The evolutionary processes have contributed to emergence and continuance of several species of flora and fauna. Climatic conditions and geographical features play a vital role in maintaining biodiversity of a particular place. India with just 2.4% of the land area of the globe, supports 7% to 8% of the recorded species of flora and fauna of the world. Till date about 89000 species of animals and 45000 species of plants have been recorded in our country and it is believed that another about 400000 species may still exist in India. For this reason our country is one of the 12 mega diverse countries in the world. With Himalayas and Western Ghats as 2 biodiversity hotspots in the country out of 34 identified so far world over. We hold a number of endemic species. Mega diverse countries harbor majority of earth's species.

The Year 2010 has been declared as the Year of biodiversity and as custodians of large number of species of flora and fauna and two very important biodiversity hotspots and large number of endemic species it comes as a huge responsibility on us to look back on our deeds and take corrective measures for our future course of action to safeguard our remaining biodiversity. The climate change is being projected as the main villain for extinction of species of flora and fauna. The Intergovernmental Panel on Climate Change (IPCC) has highlighted the possibility of abrupt and irreversible changes that could take place in future, and one of these was based on an assessment of species, which could be threatened. It has been estimated that 20% - 30% of the species assessed so far are likely to be at increased risk of extinction if the increase in global average temperature exceeds $1.5 - 2.5^{0}C$.

India has 4% of its landmass under the Protected Areas (PAs). There are 570 Wildlife Sanctuaries, 97 National Parks and 10 Conservation Reserves and Community Reserves. The efforts of in situ Conservation are generally concentrated in these PAs. The country has 14 Biosphere Reserves spread over various bio-geographic zones. The Sunderbans, Gulf of Mannar and the Nilgiries are included in International network of Biosphere Reserves recognized by UNISCO. The country has 6 World Heritage sites listed by UNISCO. 25 wetlands have been designated as Ramsar sites.

Out of about 350 Mammalian species found in India 93 are endangered. Among the endangered mammals, 38 are carnivores, 20 Artiodactyls, 5 Cervides, 14 Bovid, one of Lagomorphs, 11 Rodent and 15 of Cetacean.

The Status of avi fauna is no better. 2100 species and subspecies of birds are found in India out of which several are endangered. Rose headed duck is already extinct, white winged wood duck, grey teal, migratory Teals such as Whistling teal, hopper and mute teal are highly endangered. Several raptors, Nicobar mega pod, pheasants (mountain quail is considered extinct) are endangered. Mask fin foot is extinct as no evidence of its existence has been found in last 50 years. Apart from the above, Bustards and floricans, Indian

skimmer, Nicobar pigeon, frogmouth and horn bills are also endangered.

Among reptiles several species of turtles and tortoise, all 3 species of crocodilians, Monitor lizards and python and egg eating snake are endangered. The amphibians are no better. Indian salamander found in Eastern and north-east India is an interesting creature from zoological point of view, is highly endangered. Viviparous toad found in rain forests of Malabar is very rare. Among invertebrates, coconut or Robbers crab which is large sized hermit crab is found only in Sentinel Islands and Great Nicobar Island, is endangered. Among Insects some species of butterflies and moths and some beetles are rare and threatened.

Globally, The Convention on Biodiversity (CBD) is considered as one of the leading international conservation treaty, devoted to the conservation of biodiversity. Few of the International processes that have been contributing to the conservation of the variety of ecosystems and species are UN Convention to Combat Desertification (UNCCD) which was implemented on 26 December 1996. India signed it on 14 October 1994 and ratified it on 17 December 1996.

Convention on Migratory Species (CMS): it is an Intergovernmental treaty concerned with the conservation of wildlife and habitats on a global scale.

Convention on International Trade in Endangered species of wild fauna and flora (CITES): it is a voluntary International agreement between different Governments, aimed towards ensuring that international trade in wild animals and plants does not threaten their survival.

Ramsar convention: It is also known as the Convention on Wetlands and is an intergovernmental treaty which provides the frame work for national action and international cooperation for the conservation and judicious use of wetlands and their resources.

Though We can boast of our unique and rich biodiversity but the way our development is going it will be difficult to sustain it for long. The only way forward is the path of sustainable development in order to develop our position as a mega diverse country.

A.S. Negi

Appeal to Members for Donation

An encouraging response has come from the Honorable Members of WPSI who have generously donated to the society. The following members have donated during the quarter. We thank them for their support and hope for their continued support

1. Mr. Vivek R Sinha 134, Times Apartment Indiranagar St. I, Bangalore	Rs. 1050/- in addition to Rs. 2300 already donated
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A.S Negi

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Obituary

Sad demise of Lt. Gen (Retd.) R.K. Jasbir Singh on 3rd July 2010 in Delhi is greatly regretted. We fondly addressed him as General Sahab who was an active life member of WPSI and Environment & Anglers Association and a trustee of Operation Eye of the Tiger - India. He was a great angler and with his keen interest the Environment & Anglers Association was able to get a long term lease of a portion of Ramganga river near Corbett Tiger Reserve and establish a small camp named as 'Corbett Aglers Sack" at Marchula. He was very popular not only among his fellow Army officers but was equally respected and loved by all the anglers and wildlife lovers. He was a great

Writing an epitaph for the Mahseer

*Dr. A.J.T. Johnsingh & ** A.S. Negi

One of the fascinating narrations of Jim Corbett in his Book: 'Man-eaters of Kumaon' is about his fishing for mahseer in a river which flowed for some 60 km through a beautifully wooded valley teeming with wildlife. When Corbett was fishing, the air was filled with the fragrance of flowers and the spring songs of a multitude of birds. Corbett opined that angling for mahseer in a submontane river in such an atmosphere is a sport fit for kings.

After catching a 50lb. mahseer, Corbett concluded that he might soon forget the weight of the fish, but the sublime surroundings in which he had caught it will not be forgotten and will draw him back to that beautiful valley as yet unspoiled by the hand of man. His descriptions fit well with the Ramganga valley in the Corbett Tiger Reserve (1,400 sq.km.) which is still one of the few strong holds of mahseer in India. The Corbett Tiger Reserve has a core area of 520 sq km which is managed as a national park; the rest is the buffer zone.

The mahseer is a fresh water fish that can attain a huge size. In the past mahseer of 70-80 kg have frequently been caught and it has been reported that the fish can grow to weights exceeding 100 kg. The only other fresh water fish comparable to mahseer in weight in India is the goonch. (Bagarus baggarius) which also thrives in the Ramganga. The masheer shows more sport for its size than a salmon and therefore considered the best sport fish in the world. As most mahseer take the bait quite avidly, an erroneous impression has gained ground that they are carnivorous and rapacious. But studies have shown that they are omnivorous and take almost anything-weeds, snails, crabs and live fish. The etymology of "masheer" suggest that the word could mean a fish with "lion's gameness" "big scaled fish", "large headed fish" and "fish par excellence."

Mahseer inhabit most rivers and reservoirs throughout India, Pakistan, Nepal, Bhutan, Bangladesh, Burma and Sri Lanka. Mahseer experts have recognised six to eight species in India but no detailed information on the present status and distribution of each of these species is available. The mahseer occurring in the Corbett Tiger Reserve is the golden mahsheer (Tor putitora) which is found in river Ramganga and which weighs up to 25 kg. The different species of mahseer inhabit varied habitats ranging from tropical waters where the temperature in summer goes up to 35 degree Celsius to sub-Himalayan waters where the winter water temperature drops close to zero degree Celsius. Similarly mahseer are found in streams a few meters above sea level and in streams at altitudes of 2,000m.

Although accurate data on the catches of mahseer for different parts of the country are not available, comparison of figures from a few isolated surveys as well as observations of anglers and biologists indicate that there is a serious decline in the abundance of mahseer. The decline is generally due to a combination of factors such as unchecked and indiscriminate fishing, dynamiting and poisoning which even destroys brood fish and juveniles. Pollution and siltation of rivers and construction of dams have impeded the

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migration of mahseer which is crucial for spawning.
Unfortunately mahseer, when compared to other commercial fish are prone to depletion and extinction. One of the prime habitat requirement of mahaseer is clean water which is becoming rarer. Mahaseer need to reach their favoured spawning grounds which have to be calm with well oxygenated water and a bed of sand or gravel. The journey to these grounds is fraught with risks and dangers. The fecundity of mahseer as compared to the commercially exploited species is very low. For example the Deccan or khudree mahseer (Tor khudree) has 6000 eggs/kg body weight as compared to 2,61,000 eggs per kg body weight of rohu (Labeo rohita) and 1,33,000 eggs/kg body weight of catla (Catla catla). The eggs of mahaseer are capable of sinking in the river bed and, therefore, if there is mud on the bed instead of sand or grave, they can sink and perish. The hatching period of khudree mahseer is 60 to 80 hours and of Golden or Himalayan mahseer 80 to 96 hours compared to 18 hours for catla and rohu. Further the semi quiescent stage soon after hatching is three days of catla and rohu and six days for khudree mahseer. All these imply that mahseer is more vulnerable to all forms of decimation, and if it has to survive throughout its range, there is an urgent need to plan and implement conservation measures.

Ramganga River, where Corbett would fish for his dinner, sometime in the early part of this century, has undergone a major change due to the construction of a dam at Kalagarh in the late Sixties and early Seventies. As a result the water in the reservoir now spreads for about 60 sq. Km. in summer and 80 sq.Km. soon after the rains in July August, inundating nearly 16 Km. of the river from Kalagarh
to Dhikala. The 22 Km. stretch of the river from Domunda, where it enters the National Park, to Dhikala, remains what it was a hundred years ago, with abundant wildlife on both the banks. Mahseer fishing in the reserve is permitted in the Ramganga upstream of Domunda, in the Mandal draining the Mandal valley north of Kanda and in the Kosi upstream of Kumaria. All these fishing sites are in the buffer zone of the Reserve. The most important rivers in the Reserve where mahseer spawn are Ramganga, Mandal and Palain. Spawning occurs largely in August.

We had always wanted to fish in the Mandal and we did so in mid July 1996. After obtaining permits, we drove from Dehradun to Rathwadab on the bank of the Mandal on the northern periphery of the Reserve accompanied by 72 year old N.S. Negi, who has fished extensively in the Mandal until 20 years ago.

When we reached Rathwada, cotton-white clouds drifted over the emerald green forests. Paddy was being planted in the terraced fields. Copious lime-white water flowed in the river. All this indicate that the monsoon had set in a few weeks ago. We were tempted to go fishing that warm and sunny afternoon.

Negi took us straight to the confluence of the Kateur and the Mandal where, 20 years ago in July, he had caught several fish each weighing over 10 Kg. The confluence is about 10 Km from Maidaban where the 4 rivers enter the forest. Houses amid paddy fields were sparse on the banks of both the rivers. Several boys were playing and swimming at the confluence and two of them had improvised fishing equipment. They had not caught any fish that day. o

They also said that the largest they caught this season weighed two kg. In spite of my attempts, with the best fishing gear available in the market, we could catch only one fish which weighed around 500gm. We moved further up the river from pool to pool but all were empty. We met one boy, about 14 years old, adept in crossing the river to use his fishing gear. On seeing our disappointment, he said that the depletion of fish was due to dynamiting which was done almost every day from July to September. He added that the poachers did not come that day as they had heard about our coming.

By this time the sun had set, the light was fading fast and the common hawk cuckoo or the brain fever bird was calling repeatedly.

Already the news of dynamiting in a river that flows thorough a protected area of the country had created an atmosphere of gloom for us which was aggravated by the pining call of the bird. We had been under the illusion that the Mahseer in Corbett Tiger Reserve is safe from such vandalism.

The next morning we drove along the river for 13 Km to fish at the confluence of the Kali and Mandal, far from human habitation. The water in the Mandal was warm, while that of the Kali, which springs out of a deep, well wooded valley, was cold. Although such spots are ideal fishing sites, the largest fish that we caught weighed just close to two kg. The giant Mahseer of yesteryear were totally missing. Suddenly the serenity of the setting was disturbed by the ominous appearance of 10 men who came up the river. We watched them with abated breath. About 200 meters away they dynamited a large deep pool with formidable rapids. We moved towards them and they slunk away. Dead and dying fish drifted along the river.

In the evening, sitting on the lawns of the Rathwadhab rest house, we discussed the problem with some village elders and the forest staff. We realized that dynamiting, which kills even small fish, has been going on for the last 10 15 years and surprisingly no one thought it was an inhuman act. One elder talked about abundant fish in the past, between July and September. He said sufficient oil for burning lamps in the valley was obtained by smoking the fish. He concluded that if his generation was well built, healthy and intelligent it was because they ate plenty of fish in their younger days for about three months every year.

The discussions revealed that even other Mahseer spawning habitats - Plain and Ramganga were not safe from dynamiting. In Addition fish in the Ramganga reservoir also suffered heavily due to illegal netting. All this pointed to a bleak future for Mahseer in Corbett, the pride of India's protected areas.

We went to bed very late but sleep evaded us for a long time. The vision of the agile boy unsuccessfully trying to fish, the men dynamiting the river and dead fish floating down the river repeatedly came to our mind.

We are involved with a conservation initiative called "Operation Eye of the Tiger". This has been formed to save the tiger, its habitat and allied species. We have decided to use this programme to forge a link between the people and the Forest Department and evolve a conservation programme to protect Mahseer when it comes to Mandal Valley for spawning.

The plan includes giving water proof clothing to the staff to enable them to patrol

even during the rains, and awards for meritorious service to controlling fish poaching. The women of the Mandal valley will be called for a meeting and told of the importance of Mahseer in the health and growth of their children. The help of women will be sought to protect the fish from dynamiting. The young boys and men of the valley will be educated about the evils of the dynamiting but will be encouraged to fish with line and casting net. This could be permitted up to Maidaban, 13 Km from Rathwadab. The Forest Department will be requested to encourage more sport fishing, as the presence of sportsmen discourages illegal activities. The problem of poaching in the Ramganga and Plain rivers and in the Ramganga reservoir will be highlighted and controlled, to deter the onset of the bleak future of Mahseer in Corbett Tiger Reserve.

All this will have to be done urgently and effectively so that plentiful Mahseer start spawning in the Mandal River. The young boys will have great fun in catching the Mahseer and immense satisfaction in adding a valuable item to the family menu.

Conscience is the light of the soul that burns within the chambers of our psychological heart. It raises its voice in protest whenever anything is thought of or done contrary to righteousness

A.P.J Abdul Kalam

Translocation of Large Cats

A Forgotten Legacy of India and Present Day Prospects

*Divyabhanusinh

There were several instances of translocation of large cats which were necessitated in the 20th century because they became locally extinct. However, with our short memories and little consideration for our historical antecedents, we have either forgotten them altogether or we have chosen to ignore them. I hope that this recounting of the past will place the present efforts in a historical perspective and hopefully, a few lessons will be learnt by the present day managers of our forests and wildlife.

The earliest recorded attempt at translocation of a big cat, was with regard to lions. Central India was their home in Mughal times though they were wiped out there in the first half of the 19th Century. Maharaja Madho Rao Scindia of Gwalior (r. 1886-1925) approached Nawab Rasulkhanji of Junagadh (r. 1892-1911) in 1900 with a request to give him a few lions for his state. The Nawab turned down the request as his successors, the present day governments of Gujarat, are doing now. In the event Gwalior imported three pairs of lions from Africa around 1918. These animals must have reached their destination after days or weeks in captivity in Africa, a sea voyage of weeks to reach Indian shores and several days of rail journey within. After a spell in cages, the lions were released near Shivpuri. They seem to have adjusted fast, but became cattle lifters and a couple were shot while some wandered out of Gwalior state territory, where neighbouring princes shot them or they died natural deaths. Such evidence as we have, suggests that they had multiplied before being wiped out.

The second attempt at translocation of lions was made admittedly not in India, but in Nepal. In 1938-39 an African lion and a lioness from Kathmandu Zoo were released in the Terai region of Chitawan. They fended for themselves in spite of tigers which were plentiful at the time in the region. However, these animals took to cattle lifting and they had to be destroyed and the villagers had to be compensated for their loss.

The third attempt at translocating lions was made in 1957 when a broad minded government of Saurashtra State gave them from the Gir to U.P. for release at Chandraprabha Sanctuary near Varanasi. One lion and two lionesses arrived at their new home after an arduous train journey of ten days involving transshipment from a metre gauge to a broad gauge railway line. They settled down, multiplied in numbers, but soon wandered out of the small 96 sq.km sanctuary. All of them –they had multiplied to 11 in number – were wiped out by hunters and poachers by 1965 as they were not heard of thereafter.

The fate of the fourth proposed attempt at translocation of lions to Kuno-Palpur in M.P. from the Gir forest is fraught with controversies. The Gujarat government's refusal to part with a few animals has stalled the project. The Central government even considered releasing zoo bred Asiatic Lions instead. This project has been shelved wisely.

At this juncture, the question must be asked: Is the Gujarat government justified in refusing

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to give lions to M.P. particularly in view of our legacy of failure? I firmly believe that the answer is negative for the following reasons.

The Ngorongoro crater in Tanzania had a population of about 100 lions. They were attacked in 1962 by vast swarms of a blood sucking fly, Stomoxys calcitrans, which killed all but 10 of them. A 1987 study conducted by Dr. Stephen J. O'Brien, the Head of the Laboratory of Genomic Diversity, National Cancer Institute of USA, revealed that the surviving lions had 50% less genetic diversity than the lions of the nearby Serengeti plains. Also, the sperm count of the crater lions was only 60% of Serengeti lions and had twice the percentage of abnormal sperms. In 1993-94 an epidemic caused by an infection of canine distemper virus (CDV) destroyed 1000 lions on the Serengeti plains out of a population of some 4000. The population could withstand the loss because of a large base.

On the other hand, the Gir and its environs have but 400 plus lions according to the latest population estimation exercise which is the entire wild population of the Asian subspecies. If an unexpected calamity were to visit this region, it may well spell doom for them.

Often it is asked: Why should Gujarat give lions when they may die an unnatural death in their new home in M.P.? While the M.P. government has taken several steps to receive lions, the Gujarat government must actively support and assist the effort to ensure safety and success of the experiment. It is of course, possible that some lions may perish unnaturally. The risk is worth taking in the interest of the long term survival of the subspecies, safe in another distant habitat. It is pertinent to note that about a 100 lions live outside the Gir National Park and Sanctuary. In a span of two years, 6 lions died of electrocution, 13 fell in open wells, and 9 were poached, that is, 28 lions met with an unnatural end. Sad as it is to record these events, it is heartening to note that these deaths did not have any discernable impact on the wild population. If Gujarat were to give say 4 to 6 lions to M.P. from their peripheral populations, and even if all of them were to be destroyed unnaturally – an unlikely proposition – it would not impact the rest of the wild population.

The disasters of our legacy can warn us of the possible pit falls of the future. Today, we have at our command space age technology to assist us in this endeavour which was not available earlier. What we need is political will, not sub-national bickering. It is sad that the Gujarat government refuses to follow the far-sighted example of its predecessor, the Saurashtra State.

The first attempt at translocation of tigers was made by Maharawal Laxshman Singhji of Dungarpur (r. 1918 – 49) who later went on to become a distinguished speaker of the Rajasthan State Assembly. He brought in a tiger and a tigress in his state in 1928 where they had become locally extinct earlier due to uncontrolled hunting when his state was under British Imperial Administration during his minority. With effective protection the tiger population increased to about 20 by 1935. The Maharawal and his guests hunted 48 tigers between 1930 and 1950 and yet Dungarpur was able to maintain a stable population of about 20 of them in the wild. They were eventually wiped out along with much of its prey and the forest in the area in the early years of our independence.

Maharao Khengarji of Kutch (r. 1876 – 1942), the discoverer of flamingo city in the Great Runn, brought in a few leopards from Sirohi State, now part of Rajasthan, at the beginning of the 20th century to restock his state where the animal had been wiped out. The leopards survived and prospered until after our independence when they were wiped out along with most of their prey and habitat as state protection itself became lax as was the case with the tigers in Dungarpur in Rajasthan.

Maharaja Jam Ranjitsinhji of Nawanagar (r. 1907 – 33), better known to the cricketing world as "Ranji", brought in leopards to his state from Vijaynagar State (in Gujarat on the border of Rajasthan) when they were wiped out in his state. Their numbers too declined after independence for the same reason. Their descendents – a few stragglers –may be surviving today in Barda Hills. This is a site the Gujarat government is considering for moving a few lions from the Gir in their own version of a second home in an area of 192 sq. kms within the state itself, to bolster their stand of not parting with lions for M.P.

Coming to cheetahs, the story is somewhat different. They were used for sport of coursing blackbuck for centuries by kings, emperors, Maharajas and others. Since very few survived in the 20th century in India, they had to be imported from Africa by princes for the royal sport. The Chatrapatis of Kolhapur and Maharajas of Bhavnagar imported them regularly between 1918 and 1948. In my estimation less than 200 cheetahs crossed the Arabian Sea during that period. These animals were caught in Africa by running them down from horseback. They had to be kept in captivity there for days or weeks before being transported by sea to India, followed by overland train journeys to reach Kolhapur and Bhavnagar. The whole process of translocation took weeks if not months, which they withstood well to be subsequently tamed for the sport of hunting blackbuck. They lived out their natural life spans in captivity under strict supervision and care, though some may have perished before their time accidentally or as a result of an illness. Cheetahs would face no insurmountable problems in being transported from abroad to India for their recently proposed reintroduction here.

There may be other instances of translocation of wild cats in India of which I am not aware. I would request the readers to add to this list, should they know of any.

With this hoary past the inevitable question comes to mind: What can the Government learn from it today?

The answer is obvious and can be given in two parts. Firstly, in all these cases the first step of moving felines from one place to another, even from overseas, was a resounding success in spite of torturous journeys sans helicopters, tranquilizers and scientific paraphernalia of the 21st century. Secondly, all these cats failed to survive the withdrawal of protection to them, their prey and their habitat; this of course, does not apply to cheetahs.

With great fanfare 2 tigers and 3 tigresses have been translocated from Ranthambhore to Sariska over the last two years. The Central and Rajasthan State Governments and the Wildlife Institute of India deserve our congratulations for this success. In the euphoria of the first translocation, the Rajasthan Government officials forgot their own state's history and

claimed that this was the first instance of a tiger translocation! We now await successful breeding by these animals.

Similarly, 1 tiger and 2 tigresses were translocated from Kanha to Panna by the Madhya Pradesh Government with the help of the Central Government and the Wildlife Institute of India. Congratulations are in order to all those involved in this exercise as well. It is a pleasure to record that one tigress has had a litter of four cubs in its new home.

But this is the easy part of the total exercise. The real test will be of providing sustained protection to the tigers and their habitat from increasing human onslaught. It is precisely this failure of the Rajasthan and Madhya Pradesh governments which necessitated the current exercise. The problems are not new, nor are the solutions which need not be laboured here. Suffice it to say: the state governments shall have to put committed, specialized and even armed forest staff to ward off poachers and their ilk that are well equipped and are by no means inactive as is abundantly evident apart form protecting and improving the habitats at both places.

There is one new element in the saga though. Translocation of tigers is not a one off activity of bringing in a few animals. It is clear that if a healthy wild population of these animals has to be maintained for a long time, and that I assume is the object of the current exercise, then there shall have to be constant infusion of new blood from neighbouring populations to create a healthy gene pool in Panna, Sariska and elsewhere. There was an opportunity to send Kanha's tigers to Sariska and Ranthambhor's tigers to Panna. It is sad that we missed it. The future of tigers in India will depend on this intervention as our tiger habitats are fragmented and they are becoming more so. Each tiger population in all four areas is very small too. Panna and Sariska shall be no exception. The powers that be shall have to take note of this situation and create and act upon a time bound plan on an ever continuing basis. If this is not done, the present translocations will create more fragmented populations at best. What it means in the long run is another story.

One hopes that our Central and State Governments do not go back to their laissez fair approach to conservation once the euphoria of these successes evaporates as it must. The authorities have to learn from the past, as it has a future.

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A Procedure for Tracing Representatives Tiger Pugmarks

*Vinod Rishi

The use of a pug mark tracer - a rectangular sheet of glass, normally about 18 cm x22.5 cm x 3 mm - in the exercise for census of tigers is well known to the forest staff. However, neither every person associated with census work is a good draftsman, nor can one expect it to be so. Consequently more often than not, the tracings that reach the co-ordinator of the census operation for screening the tigers do not qualify as the right kind of tracings. Defective tracings create problems in screening the pugmarks for identification of tigers and arriving at the correct census figure. This factor has often been the root cause of criticism of the work done by the forest officers in counting tigers by the so called 'pug-mark' technique. The criticism is valid so long as such abnormal tracings are taken into account and personal skills are pressed into service to judge the tracings and identify the tigers.

The problem of tracing non-representative tracings is not insurmountable. The following method can be employed to enable any person to pick-up truly representative tracing of the pugmarks of tigers and leopards:

For the purpose of census of tigers, the tracings of foot prints left on the ground by the left foot of tigers are considered. The current practice is to take the tracings of the left hind foot of the tiger as a standard for comparison and identification of tigers.

To recall, for taking a tracing of the pugmark the tracer is placed over the impression of the left hind foot of the tiger (or the leopard, as the case may be) such that the glass does not touch the impression. A felt tipped pen is used to trace the outlines of the pugmark on the tracer by looking at the pugmark impression vertically down through the glass so as to avoid parallax error. After the traced out form of the pugmark has dried out on the tracer glass, the tracer is picked up and a piece of tracing paper is placed on the tracer-glass plate. It is then held against the light so that outlines of pugmark drawn on the glass plate can be seen through the tracing paper. The pugmark impression is then traced out on the tracing paper. This method is familiar to most of the field staff involved in carrying out the census exercise in most of the tiger reserves.

The foot prints of the left hind foot are normally a mirror reflection of the impressions left by the right foot unless there is a physical deformity in the structure of the limb. This empirical truth becomes useful in refining the tracings of the foot prints and eliminating defects introduced because of human error. For applying the method for refinement of the tracings, it will be necessary to pick up a trail which has at least three clear imprints of the left hind foot of the same tiger. The exercise then starts with taking a tracing of one of the imprints of the left hind foot of the tiger.

In order to carry out the refining of the traced pugmark the correction is to be made before the traced pugmark impression is transferred to a tracing sheet as a permanent record.

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That is, the work for refining the pugmark impression is to be taken up while the impression is still on the tracer-glass plate.

After tracing the pugmark of left hind foot on the glass plate, the tiger tracer is turned over such that the left foot print now looks like the print of the right foot. The inverted tracer when placed over pug mark of the right hind foot will show some amount of difference in the outline of the imprint on the ground and the traced outline on the inverted surface of the tracer glass. It helps if the top edge of outline of the inter-mediate pad - the broad palm-like pad beyond which the toes are arranged - on the ground is aligned with the corresponding part of the top edge of intermediate pad drawn on the tracer is aligned first and the rest of the boundaries of the intermediate pad are aligned thereafter. It clearly brings out the deviations between the outlines traced on the glass sheet and the borders of the pug marks of the foot on the ground.

At this stage, the tracer-glass will be having the tracing of the left hind foot-print on its underside, which when looked at from above will appear as if it is the impression of the right hind foot. After the tracer is aligned to approximately match the actual impression of right hind-foot left by the tiger on the ground, a correction line is to be drawn approximately averaging the difference between the two boundaries of the tracing on the dorsal side on the tracer and the borders of the right pug mark on the ground. We will now have two tracings on the glass sheet, one being the outline traced from the actual impression of the left hind foot of the tiger, and the other the corrected tracing drawn by comparing its reversed image with the imprint of the right hind foot.

The tracer is then taken to the next available left hind foot print and the tracer is once again turned over to align the boundaries of the tracing with those of the intermediate pad of the second left

pugmark. If needed, further refining of the boundaries of the intermediate pad may be carried out in the same manner as described above. The tiger tracer may be turned over yet again for a check with the next available pug mark of the right hind limb. Invariably two repetitions tend to refine the tracing on the glass plate sufficiently to allow finalization of the representative tracing of the tiger pugmarks. Further cross check can be made if more foot prints belonging to the same trail are available along the forest path. The refined mark is then transferred to the tracing sheet and used as a basic pugmark for the purpose of tiger census.

The human error in draftsman ship skill of the observer can be overcome to quite a reasonable extent by drawing at least two refined tracings from each set of a tiger trail.

Caution:

IF REFINEMENT SEEMS TO BE IMPOSSIBLE BECAUSE THERE IS A CONSTANT DIFFERENCE BETWEEN THE LEFT AND RIGHT HIND FOOT IMPRESSIONS IT CAN MEAN A CHARACTERSTIC OF THE INDIVIDUAL TIGER AND BE A VERY USEFUL IDENTIFYING FEATURE OF THAT PARTICULAR TIGER. Deviations caused by physical deformity in the tiger's paw tend to recur over and over again every time the attempt is made to reconcile the tracing with the pugmark of the other foot.

The deviation refuses to get eliminated. The deformity detected must be taken note of and recorded as a special feature of the particular tiger.

For persons with excellent draftsmanship skills and good understanding of the structure of the foot and pads of the tiger it is possible to trace a perfect representative pugmark by following a virtual contour line about 1-2 mm above the bottom of the intermediate pad. Yet it is advisable to use the procedure for refining the tracings as far as possible before finalizing the tracings. Normally, even with a good understanding of the shape and form of tiger pugmarks, it is difficult to know exactly where on the tracer the line should be drawn to record the true form of the pugmark. For those who can visualize a contour line running all round the inside edges of the impressions left by intermediate pad and the toe-pads, 1.5 mm to 2 mm above the flat basin of the impression on the impression pad, it may be possible to draw the form more accurately to get the actual shape and size of the pugmark. It gives a better tracing for refinement by the technique described above. For training one can draw a contour line on a plaster cast of the tiger pugmark and trace it using a tiger tracer. But this is not advisable unless one has the requisite skill to do so, or if there is no trail available for refining the tracing. The procedure for refinement of tracing is not applicable to tracing of single pugmarks found at the edge of water holes or vague trails in loose sand.

Note: This article was published in the previous issue (Vol. 48, no. 4). Due to several mistakes in typing this article is being published again in this issue.

Do not brood over your past mistakes and failures as this will only fill your mind with grief, regret and depression. Do not repeat them in the future.

Swami Sivanand

An Introduction to Ecotourism

*Naresh Chandra Madhwal

Around the world Ecotourism has been praised as a panacea, a way to fund scientific research, protect fragile ecosystems, benefit rural communities, enhance ecological and cultural sensitivity and install environmental awareness in the fast growing travel industry. The origin of the term ecotourism are not entirely clear, one of the first persons to coin this word was, Hetzer in 1965. He identified four pillars or principles of ecotourism which are:

1. To minimize environmental impacts.
2. To respect host culture.
3. Maximizing the benefits to local people.
4. To provide maximum satisfaction to tourists.

The first of these is the most distinguishing characteristic of ecotourism.
Eco-tourism developed during the period of 1970's and 1980's when growing environmental concern coupled with an emerging dissatisfaction with mass tourism led to increased demand for nature based experiences of an alternative nature. At the same time, less developed countries began to realize that nature based tourism offers a number of means of earning foreign exchange and adds to the economy of the state.

What is Ecotourism:
The first formal definition of ecotourism is credited to Ceballos and Lascurain (1987), who defined it as, "Travelling to relatively undisturbed or uncontaminated areas with a specific objective of studying admiring and enjoying the scenery and its wild plants and animals as well as any existing cultural manifestations both past and present found in these areas."

The ecotourism society (1991), defines ecotourism as, "Responsible travel to natural areas, which conserves the environment and improves the well being of the local population." National Ecotourism strategy of Australia has defined it as "Ecotourism is nature based tourism that involves education and interpretation of the natural environment and is managed to be ecologically sustainable."
Although any number of definitions of ecotourism can be given, it is notable that, all these definitions indicate, that three dimensions can represent the main essence of the concept. According to this inference ecotourism is:

A. Nature based
B. Environmentally educative and
C. Sustainably managed

There are five fundamental functions of ecotourism namely:

1. Protection of natural areas.

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2. Environmental education.
3. Generation of money.
4. Quality tourism.
5. Local participation and providing benefits to local people.

The points 3, 4, and 5 fall under the heading sustainably managed.

We shall discuss main characteristics of ecotourism one by one.

1. *Nature Based*: The most obvious characteristic of ecotourism is that it is nature based. Valentine (1992), defines nature based tourism as tourism primarily concerned with direct enjoyment of some relatively undisturbed phenomenon of nature. A variety of motivations for nature based tourism has been suggested, including the desire to get back in touch with nature, a desire to escape the pressure of everyday life, seeing wildlife in their environments etc. Sometimes some specific interests and activities such as, trekking, bird watching, white water rafting and kayaking lead to nature based tourism.

   There may be three main dimensions of nature based tourism pertaining to the experience, style and location. In terms of the type of experience involved, different nature based tourism experiences vary in nature dependency, intensity of interaction, social aspects and duration. Different styles are associated with different levels of infrastructure support, group size and type, cultural interaction factor, willingness to pay and the length of the visit. Locations vary in terms of accessibility, development contribution, ownership and fragility.

   Ecotourism always takes place in protected areas. It is interesting to observe that relatively undisturbed areas are also commonly found outside protected areas. Indeed it can be asked that ecotourism should occur outside protected areas that are worthy of protection from development and tourism represents a form of development. Unprotected areas are also most suited to another claimed benefit of ecotourism activity, promoting conservation of protected areas.

2. *Environmentally Educative*: A feature of the ecotourism experience is education and interpretation about the natural environment and any planned, sequential and systematic process, based on definite learning objectives and using specific learning procedures. While interpretation is an educational activity which aims to reveal meanings and relationships through the use of original objects by first hand experience and by illustrative media rather than simply to communicate factual information. Virtually all nature based tourism involves some days of learning. It is education and interpretation that serves as a key element and defining characteristics of ecotourism experiences. Two main purposes of environmental education can be distinguished in the ecotourism context. First purpose involves satisfying tourists' demand for information regarding natural and cultural attractions, thereby providing a satisfying recreational experience. The second purpose involves changing in a pre-

environmental way, the knowledge, attitude and behavior of tourists, with a view to minimizing negative impacts and producing a more environmentally and culturally aware citizenry. The two purposes will often be related, for example, when information provided about the sensitive nature of the ecology serves both purposes. Education can be environmentally informative without being environmentally supportive. The first function of environmental education is that, ecotourism concedes with what will often be the primary motivation for undertaking an ecotourism experience that is, learning about the plants, wildlife, landscapes, historical monuments, etc. which are unique to an area. Ecotourism is therefore environmentally educative.

3. *Ecotourism is sustainably managed*: Sustainability can be defined as, "meeting the needs of the present without compromising the ability of future generations to meet their own needs." There are four basic principles of sustainable tourism development.
   1. Holistic planning and strategy making.
   2. Preservation of essential ecological process.
   3. Protection of human heritage and biodiversity.
   4. Developments to ensure that productivity can be sustained over the long term for future generations.

4. *Benefits to local people*: Eco tourism must provide benefits to local people. Ecotourism should support local economics i.e., its activities must provide some benefit to local people or communities. It is very important to involve local people in all ecotourism activities, because the involvement of local communities not only benefits the community and the environment but also improves the quality of the tourist experience. Local communities can become involved in ecotourism operations and in the provision of knowledge, services, facilities and products. These benefits should outweigh the cost of ecotourism to the host community and environment.

   Ecotourism can also generate income for resource conservation management in addition to social and cultural benefit.

5. *Tourist Satisfaction*: Satisfaction of visitors with the ecotourism experience is essential to long term liability of the ecotourism sector. This concept includes the importance of visitor safety in regard to political stability. Information provided about ecotourism opportunities should clearly represent the opportunities offered at particular ecotourism destinations. The ecotourism experience should exceed the realistic expectation of the visitor. Client success and satisfaction should be second, only to the conservation and protection of what they visit.

Thus we find that ecotourism is nature based, environmentally educative, sustainably managed, locally beneficial, and it must provide maximum satisfaction to tourists.

AN UNFORGETTABLE EXPERIENCE

**Kunwar Atul Raj Singh*

I was at a friend's place when I was questioned about wildlife in Ladakh. I had been in the area for quite sometime. Answering with confidence and first hand knowledge I replied speaking highly about it. Somebody asked, 'You haven't mentioned the ibex. I thought that the area has a good score of them.'

'Of Course' I nodded, but sadly enough I had heard a lot but never spotted one. A pair of magnificent horns at my father's house made me wonder about the elegance of this majestic creature. It has been my desire to watch and study the animal and till date in spite of having spent so much time trekking in the wilderness of Ladakh, I had not been blessed with the opportunity. Though I did hear report of ibex sighting, which I doubted because anything having four legs, that moved was a junglee bakra, be it a Bharal or Thar which were in abundance.

It so happened that I had just come back after a long vacation and as per the rule I was acclimatizing at an altitude of 10,000 ft before proceeding any further. It was my second day of acclimatization. The higher reaches had witnessed heavy snow fall and few inches of it had also accumulated at my location, drastically bringing the temperature to well below minus 20^0C.

The terrain in the area was rugged, lofty barren mountains varying in height from 10,000 to 18,000 ft. having razor sharp edges, with scattered scree and cliff face boulder hillsides. A small stream partly frozen adorned the valley, which turned wild and furious in the hotter months, making it impossible to ford, but now it was just on icy trickle. Along this stream was a small settlement having few cultivated fields dotted with poplar, willow and apricot trees. The population is largely Buddhist (it is only in the Buddhist dominated areas that any form of wildlife is preserved). The villagers boasted of a Gompa adorned with horns of ibex, nayan, bharal and thar. On enquiring from the locals I was told that it was an offering to the Gods by the village headman, who was an excellent shikari and is long dead and gone. Seeing the heap of horns I was certain that this area must surely be harbouring the majestic creature I was in search of. That evening I set out for a walk along the rock scattered, dusty gravel road. I had covered a few hundred yards when a thought clicked in my mind of going to the big nala. With the onset of winters the area gets covered with heavy deposit of snow towering up to 8-10 ft. and temperature goes down to minus 35^0C. All life ceases to exist in the higher reaches.Feeling too lazy to get my field glasses, I took a short cut up the scree littered slope and down the other side. Gasping for breath, I stood looking at the rock face, skidding past the vertical slabs I proceeded up the nala. The nala was in the sun shadow area, the residual snow level was almost a foot deep. Pug marks of a fox that probably had a den close by crisscrossed every inch of snow. As I ascended slowly, grasping for breath, thinking how lovely and wonderful it would be if a snow leopard was sighted my thoughts were disturbed on hearing a stone tumbling down the hillside. I looked up in the direction and

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spotted a movement, not sure what it was immediately so I ducked behind a big boulder that lay ahead of me and I started scanning the hillside.
The sun was hitting the Northern slope behind my back. As I scanned the area with my naked eyes I spotted an animal that I thought to be a female bharal and one by one I picked up the whole herd as they flicked their ears and moved their heads. I was cursing my self for not having brought my field glasses, the best I could do now was just freeze and watch. This was a difficult and a painful task. It was very cold and freezing wind started to pierce thought my thick layers of woollens. I had almost decided to quit, when just at that moment the herd dashed down towards the nala bed playfully, hopping elegantly with skills unmatched over a slippery face of the cliff.
The animal looked greyish in colour with a black line running along the side and a black puffy ball shaped tail. I wasn't sure of it's identity and was still wondering, when I spotted a bigger animal, blackish tan with a grey belly and big dirty white oval patch on the back. I thought it to be a domestic goat at first sight. It had a prominent beard and swaying his head from side to side it dashed behind a boulder, another one of the same description followed from behind, I was so excited that all the pain and misery that I was undergoing just vanished and I was bubbling with excitement.

The next I saw the herd about 75m away from me in the nala bed. They were all females following in a row one behind the other tip toeing over the crystal snow gingerly. They scrambled up the other side. I was puzzled by the disappearance of the big tan creature when it appeared all of a sudden, least bothered, following his harem, it had horns about 24 inches long straight up and curving backwards with a thick woollen fur coat and a magnificent beard curving outwards. I still could not figure out what it was for I had never seen an animal of such description in any of the books. I was still in the pondering mood when one of the most beautiful and majestic creations of nature stepped out from behind the boulders. The animal unparallel in beauty and strength was none other than the one I had been seeking - an Ibex. It had horns about four feet scimitar curved that graced the tan beauty. It stood right in the centre of the nala, as though inspecting his harem. He was a grand old beast, absolutely blackish tan in color with a muddy white oval patch on its back having a light shaded yellowish belly. A smart trimmed 6/8 inches beard and sovereign to his looks. He had a small puffy ball tail with a distinctive white V mark below it. It resembled a properly aligned rifle sight with the ball resting in the centre of the V.

As the herd scrambled up the hill side I whistled, but they took no notice so I repeated the act but still no attention was paid. So I coughed. At once the female leading the team dashed up to the edge of a boulder and looked down, ears pin pointing in my direction. I coughed again. The other members were not bothered they kept ascending, nibbling occasionally at the scanty dry grass.

This time I popped up my head from behind the boulder and ducked back again. The female was still focusing in my direction but it did not raise an alarm. The grand old male had disappeared among the rocks. I waited and watched the sentry for a few seconds then I let

out a shrilling whistle followed by a half hearted wave of my hands.

Instantly the sentry gave a sharp call exactly like a whistle followed by another sharp whistle and kept looking in my direction, quickly other members of the herd joined in. Again they whistled repeatedly. Had I not seen the animal and only heard the whistle for sure I would have mistaken it for that of a human being and so would have any body else. I would describe the whistle as sharp and short ending.

I was more interested in the old male; he had climbed into a jutting rock and looked warily at me. The herd had gone about 300 yards up the hill side and I had been watching them for about 45 minutes now. My hands and feet had started to become numb, so I stood up and waved my hands, the herd lined up and curiously glimpsed at me. I waved my hands and threw my cap in the air. The old head stood firm looking at the foolish tricks of a man. He went back behind the boulder and surfaced again to see if I had gone or not.

Gradually the herd disappeared behind a small ridge as I got up and happily descended to my lair. Halfway down I turned back and saw a female on the skyline still staring in my direction. It was a beautiful sight.

I wish I had my binocular and a movie camera with me.

There are two kinds of people, those who do work and those who take credit, try to be in the first group; there is less competition there.

Indira Gandhi

BLUE BULL WITH THREE CALVES

*Arun M.K. Baros & Akhilesh Baros

I visited the Gomardah Wild Life Sanctuary, Distt. Raigarh, Chhattisgarh, India, on 21 March 2009. During the evening on a plateau beyond the ghat of Chimta pahad, (N-21.45598, E-083.505791) a female Blue bull was seen with three equal sized calves of similar coloration. The herd on seeing us entered the forest, and to whatever extent it was possible, they were photographed (although not clearly). After 2/3 minutes they crossed the road and about 200 meters further on, photography were again attempted. This was the first time that I saw three calves which appeared to be of the same litter. As per the available literature, generally one or two calves are dropped at a time. The calves appeared to be about 5/6 months old. The forest department staff as well as the local residents also mentioned to me about sightings of this female with three calves, which they admitted is unusual and that, had not been seen by them earlier.
In this context the following literature was examined.

S.H. Prater – (The Book of Indian Animals P-272-3), which mentions that young ones are produced in all seasons, gestation period is 8-9 months. No mention has been made about the size of a litter.

A.A. Durban Brander (Wild Animals in Central India P. 223-4).

He mentions the gestation period is 8 to 9 months. One or two young ones being born at a time and no sooner is one family born than it frequently happens that another one is on its way. New born calves are recorded in so many different seasons that it is difficult to say about a regular breeding period but most take place before the rains.

T.C. Jerdon – (Hand Book of Mammals of India p. 272-3)

No mention has been made about the number of calves in a litter. The species associate in small herds of different ages varying in number from seven-eight and upwards.

Robert A Sturndale – (Mammals of India, p. 476-79)

No mention has been made about the number of calves in a litter.

The available literature, mentions only 1 or 2 calves so the sighting record of 3 calves of the same size, age and colour with a single female, suggests birth of 3 calves in a single litter by a cow Blue bull. Reputed wild life experts were also consulted and it was opined that they have

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not seen three calves of the same litter, with a single mother, which may be an unusual record for the species and thus needs further enlightenment.

There is no end to education. It is not that you read a book, pass an examination, and finish with education. The whole of life, from the moment you are born to the moment you die, is a process of learning.

-Jiddu Krishnamurti

Land of the White Tiger

**Bhagat Singh*

Hiten, a new entrant into the arena of nature, one day, asked Aman, his close friend, and a naturalist by birth, having been born and brought up in the lap of Himalayas, if he could suggest some forest land, where he could spend a day or two, and where he could also possibly sight some birds and wild animals in their natural habitats. He went on to tell him that my uncle, who is a senior police officer in Rewa, has invited him, more than once, to visit the forest of Rewa, where the former Maharaja of Rewa had spotted white tigers, unlikely to be found any where else in the world. Aman told him that he would introduce him to his maternal grandfather, who had been to Bandhavgarh National Park (Rewa Forest), and had a fairly good knowledge of the Indian jungles. He further stated that he too has been planning to visit the land of the white tiger for quite sometime. So both of us could accompany the good old grandfather at some time convenient to all three.

One evening, the three of us discussed the matter, and decided to visit Bandhavgarh Tiger Reserve. Within a fortnight, all arrangements – reservation of accommodation, local transports etc. inside the park were completed through the good offices of Hiten's uncle.

We reached Bandhavgarh toward the end of January. The winter was severe and cold as it was in Solan (H.P.) – the birth place of Aman. The forest looked bitten by frosted cold. Grasslands had turned brownish-pale. Trees had started shedding their leaves. Creepers had loosened their hold on the trees. Bamboo thickets had lost much of their texture. Bushes had shrunk and become loose, with twigs protruding out, that had earlier provided perches for bush-chats, bee-eaters and other insect eating birds. Though winter-scars could well be seen here and there, yet nature, when seen in its entirety, was sparking with its grandeur, and seemed to be radiating its splendor for the visitors who come there to escape the dull and drab monotony of city life, or to soothe out their depressed feelings or to enjoy the thrill of watching birds and animals in their natural and undisturbed state. Hills were covered with canopies of forest, providing leafy shade to the animals, which are intolerant of heat. The tree and shrub jungle was studded with patches of light green foliage, dried-up golden grass, and velvet green meadows. Water pools had plenty of water for the many species of mammals, birds and reptiles, which have made this forest land their home. Laxman Ganga, descending down from the great Bandhavgarh Fort, splashed through the forest, providing much needed moisture to the vegetation that grows along its banks, and supplying perennial water to the innumerable birds and animals, who visit it every day all the year round, either to quench their thirst, to wash off their dust, to cool off their bodies, or to lie down in the dense shade of the trees, roofed over by creeper. Shallow depressions had a luxuriant growth of elephant grass.

A great multitude of birds could be heard pouring out their joyful songs every morning and

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evening. Many species of fruit-eating birds - green pigeons, barbets, bulbuls, parakeets, etc. could be seen feeding on ficus and plum trees. Sun-birds and others of their kind could be spotted drinking nectar from flowers on the trees bedecked with bloom; while others could be watched eating petals, or feeding on bees collecting honey. Gaily coloured butterflies could be seen flitting from flower to flower. Peacocks could be heard giving their piercing call. Besides, one could also inhale the air that throbbed with the fragrance of wild flowers.

The reserve, nestled in the Vindhya-ranges, constitutes one of the richest wildlife belts in central India. The terrain consists of forested hills, plateaus, open valleys and grasslands that provide endless fascination to the visitors who come there to enjoy the serene wilderness of the central highlands of India. The hilltops have extensive plateaus, whose edges fall steeply down for some distance and then turn into gentler slopes that merge below into the valleys. The plateaus have scarce tree growth, but are endowed with vast expenses of grasslands, whose growth is promoted by perennial pools. The upper slopes have glades, which are sustained by seepage springs. The plateaus and the upper slopes attract a wide variety of animals. Prominent amongst them being sambhar, gaur, chausingha, cheetal, wild pig, langur, sloth bear etc.

The gentler slopes have a mixed growth of bamboo and other palatable shrubs, besides stripes of grasses that grow along the banks of the streams rolling down the hills. These provide rich forage for the langur, gaur, sambhar and muntjac. Cheetals also visit these foraging areas, particularly during the rains.

The forest at the foot of the hills is dominated by Sal, which provides food in the form of leaf, flower and fruit. Bamboo, shrubs, grasses and other vegetation that flourish along with the Sal also contain plenty of good forage. The valleys are wide open, and have excellent grasslands, interspersed with Sal trees. The Sal forest, right from the lower slopes down to the valleys below, with all its mixed growth of bamboo, shrubs and grasses, provides the right kind of habitat for the most striking, but deadly predator of the Indian jungle – the tiger.

The next day, we decided to move along the narrow course that flows right through the forest. It was afternoon and there was still enough daylight. This is the right time for the big cats, who rest on forested hills during the hard day-hours under the dense canopies of trees, well roofed over by creepers, to climb down, and to drink water or to cool off their bodies during the summer in the fresh flowing water of the streams at places convenient to them, before setting out on their hunting spree. As dusk descends down, the earth envelopes the forest with its dreaded darkness. Shallow water channels wind their way through the mixed growth of tall grasses. Mounted firmly on elephant-back, we moved first along the edge of a water stream, looking around with the fond hope of spotting the stripped beast somewhere in the water or in the grass on either side of it. On going some distance, the elephant suddenly shrieked, turned violently to the side, and rudely rushed forward. Jolted badly at first, we could not make out as to what all this was about. A moment later, firmly securing ourselves on the Khatola, when we scanned the land around, we sighted a huge male tiger, in the prime of his youth, walking gently in the grassland up the stream. We followed

him briskly, holding our breath close to our heart. Finding us on his heel, the beast smartly turned and fiercely growled at us, showing his resentment, in no uncertain terms, at the unwarranted intrusion into his territory. Losing no time we took a snapshot of him with wrath writ large on his face, and eyes, burning in anger, glued on us, as if he was all set to punish us for our foolish adventure. Having scolded us badly, the gentle beast crossed the channel with a few quick jumps, and climbed up the steep bank, and settled down in the tall grass.

The sheer excitement of facing the huge tiger from even more close quarters, lifted our spirits to the seventh sky; but at the same time, faded our wisdom for respecting the laws of nature, which are indispensable to sustain life in the jungles infested with dangerous animals, well capable of striking terror even in stone hearts. Lost in excitement, we manoeuvred the elephant we were seated on, unmindful of the imminent danger lurking around us, in the direction where the gentle beast, fully alert and watchful, was waiting, keeping a sharp eye on our every movement. Obviously, he was contemplating, in all seriousness, his next move to deal with his worst enemy on earth.

Emboldened by the event that had just happened, we reached close to the lord, who was all set and firmly determined to teach a lesson to the intruders for committing the silly mistake of violating the laws of his kingdom.

The poor elephant, with years of experience to its credit, reluctantly stepped forward to face the stripped beast. All of a sudden, the elephant, terribly shaken, jumped in quick jerks, shrieked and trumpeted fiercely, and started violently beating the grass, left and right, with his powerful trunk, crushing the growth underneath with her forefeet and in the process tossing the three of us in the air and back. All this raked out our nerves to the bottom, and froze our blood to the bones. It looked as if the heavens had fallen from above, and the ground below seemed to be slipping from under out feet. The enraged tiger growled furiously, emitting full-throated roars, as if he was threatening us, leaving no room for doubt, that he was fully determined to spell hell on us for our stupid adventure. The jungle around echoed with the terrifying roars of the tiger, intermixed with the huge trumpeting sounds of the elephant. Utter confusion prevailed all over. The jungle folk, within hearing distance, got alert on their toes, and started giving warning calls about the approaching danger. Birds also joined the chorus with equal anxiety knowing instinctively that anything may happen the next moment.

While all this was going on, somehow, I managed with the grace of God, to take a snapshot of the enraged tiger, with its mouth wide upon, and eyes radiating such a wrathful glow, that it could squeeze blood from even the boldest heart. Evidently, he was all set to pounce upon the elephant to teach us a lesson which none of us could ever forget. Had the gentle beast not been kind enough to spare our life, we had absolutely no chance to live to narrate this horrifying tale later.

And as if that was not enough, I asked the Mahout to repeat the foolish act once more, so that I could take a few more shots of this tiger. The Mahout ordered the elephant to move forward. At first it hesitated a bit, but when the Mahout administered blows on its forehead, it

be mauled by the powerful enemy she was confronted with.

At this, the tiger lost his patience, and growling, rushed furiously towards the elephant. Seeing certain death rolling on towards it, the elephant lifted its forefeet up in the air, and trumpeted fiercely in an offensive posture to ward off the enemy. The tiger crashed against the underside of the elephant in an obvious attempt to tear open its belly. Sensing the intensity of the danger that posed a serious threat to our lives, the wise elephant, experienced as it was, smartly sank to the ground in an attempt to crush the tiger under its weight.

The events happened so fast and sudden that all of us got frightened to the bones. Badly jolted, we could be seen tossing up and down on the elephant's back. At first, it seemed as if the tiger had tore open the belly of the elephant but it got to its feet and we could see the tiger growling a few feet away. Sensing the gravity of the situation, the wise Mahout pulled back the elephant to a safe distance from the deadly beast. Losing no time, I turned to the Mahout and with a sigh of relief I said, "It is enough. No more."

Assuring himself that the offenders had lost their nerve and retreated to a sufficiently safe distance to escape punishment, the gentleman of the forest quietly walked some distance and made himself comfortable in a clump of bushes. In this melee God was kind enough not only to ensure our safe return, but also to enable me to take a few more photographs of the huge tiger. Within a few moments, the situation calmed down, and as we regained our nerves, we looked at one another. The faces of the two young enthusiasts - Aman and Hiten – had turned pale, as if all blood had flowed out of them. Holding them close to my heart, I repeatedly showered praises on them for their courageous fortitude, and exhorted them to undertake such adventurous trips in future to explore the rich treasure of the natural wealth Mother Nature has preserved since ages for all creatures that inhabit this planet. I further told them that they should be well equipped, mentally and physically, and to undertake effective measures to safeguard this exclusive heritage from excessive exploitation, disuse and misuse.

Soon the young boys came out of their dazed condition, and with smiling faces and eyes shining, promised to work, with missionary zeal, for the protection, preservation and conservation of the natural wealth of our country.

Although we stayed in the land of the white tiger for a week, we could not be blessed with the sight of any white tiger. The fact remains that once a tigress, for biological reasons, gave birth to white cubs. The then Maharaja of Rewa brought up these cubs in captivity. All the white tigers that are alive today are, in fact the descendants of those white cubs.

From the Archive of Cheetal

The Cheetah

M. Krishnan

The last report of a wild Cheetah (or hunting leopard) in India, so far as I know, is a sight-record almost 20 years old from near Chittoor in Andhra Pradesh, from an area in which cheetahs were not previously known. A nocturnal motorist had a glimpse of an animal which he identified as a cheetah, a sufficiently long glimpse for him to notice that it was not a leopard.

Now, in its somewhat grey-hound build (it carries its body loose-slung, though like a cat) and solid spots a cheetah is distinct from a leopard, and not easily confused with it by one who knows both animals, but then leopards vary so much in build and size and markings, and both beasts are so distinct in a yellow light (such as the glare of head lamps of motor car in the forties) that one may hesitate to accept this sight-record as proven. And even if one does, that was the last ever heard of a wild cheetah in our country.

Fifteen years ago, hearing reports of the "sivungi" (as the cheetah is called in Kannada) in the country around the Tungabhadara Dam, I went there with friends to check. This was far likelier cheetah country, flat, hill-dotted scrub and jungle where the animal had long been known, but after a lengthy examination of all witnesses we had to conclude, regretfully, that no cheetah had been really seen and even if it had been, the massacre of all wild life around the site of the dam had left it with no choice except to shift or starve to death.

The point of all this palaver is not to place the date of the cheetah's extinction in India as nearly as possible, but to add that when I said recently in the course of a series on our wild life, written for India's best known weekly, that the cheetah or hunting leopard had become extinct here within the past 20 years, readers wrote both to contradict and to corroborate me. The contradictor referred to his having seen the cheetahs of the Maharaja of Kolhapur, kept for hunting buck - apparently he did not know that they had been imported from Africa. The corroborator said that the trade in cheetah-skins in the sub Himalayan region had finished off the animal was he thinking of the snow leopard?

With popular knowledge of our wild life so vague even among enthusiasts, I need justification or excuses for reiterating the main, well-known facts about the cheetah.

It is distinguished from all the greater cats in that its claws are only semi-retractile-that is, it can not withdraw its claws fully into their sheaths, so that they are always exposed, and blunted like a dog's. It is the size of a medium-sized leopard, but longer and thinner in the leg, generally slimmer, and with a long fluffy tail, a small head, and solid black spots - the spots never form rosettes as in the leopard - on a tawny to greyish-ochre ground.

For the first two furlongs it is easily the fastest thing on legs; it is the only animal that can run down black buck within that distance, and can hit top speed almost straightway from a crouching start - a typical cat talent. It has been timed over short distance with stopwatch, and

This article first appear in Cheetal volume 8 No. 1 in October 1965

though not hunting in such runs, it has demonstrated its ability to spurt at well over 60 m.p.h.

Cheetahs had a wide range, till comparatively recent times, over Africa, Asia, north of India, and India, frequenting flat, hill-dotted country where they could use their stupendous speed to run down their quarry, which often consisted of antelopes. In India, blackbuck, chinkara, hares, and other small animals of the flat country (including ground-birds) were their main prey.

Only in our country was the art of training cheetahs for the hunting of buck and gazelle for men developed only adult cheetahs, which had already learnt how to chase and overhaul the swiftest antelopes, were of any use for the sport; in a few days these were tamed into submission, and led on a rope lead, like large dogs, and became tolerant of human company. The sport reached its zenith during the days of the Great Moghuls, and was popular for centuries thereafter with princes and chieftains.

Cheetahs never attack men unprovoked, and even when provoked prefer to retreat a thing they can do easily, being so fleet footed. I believe there is no case on records of a cheetah having attacked a man in our country, but occasionally they used to take a goat or some other small animal from villages skirting the jungle. Cheetahs are now extinct in Asia the Deccan in India was probably their last stronghold in Asia. They are still to be found in Africa. There is no difference between the African and Asian Cheetah, and it is now realized that the King Cheetah (with a very richly colored coat) is only a local variety of the African cheetah and not even a sub-species.

People may ask: Why can't we reintroduce cheetahs into India? We can, but first we must have a realistic appreciation of the reasons for the extinction of cheetahs in our country, and must be sure of our ability to ensure certain factors. It was the occupation of the flat country by our growing humanity, and the decline of forest plains all over India, that was the main cause of the disappearance of the cheetah here.

Are there any flat-country forests left, adequately stocked with the buck, gazelle and other natural prey of the cheetah, into which we can reintroduce the animal? Can we offer it, and also its prey full protection from poachers and trappers, with our Governments so reluctant to appoint adequate protective staff even in sanctuaries?

And even if you feel enthusiastic about our wild life and realize the wisdom of reintroducing a lost species before too many changes overtake its old homes in India, of what use is the strength of your feeling, with the invincible ignorance of our Government departments so exclusively in charge of our wild life? I am afraid these questions need to be answered before any attempt to reintroduce the cheetah into India can be made.

Cheetal quarterly news

More Members join WPSI

The interest in taking up membership of Wildlife Preservation Society of India continued and during the quarter following new member joined the Society. We welcome them and hope that their contribution to the society will go a long way in strengthening it.

1.	Mr. Ravi Sharma 21 Hanuman Chowk, Dehradun 248001	Life member
2.	Mr. Vijai Mohan Nath D-90/ Sector IV, Defence Colony Dehradun	Life Member
3.	Bird life International Well brook court, Girton Road Cambridge, CB 30 NA, UK	Annual Institutional member
4.	Foundation for Ecological Security PB No. 29, Jahangirpura, PO Gopalpura Vadod 388 370 Distt. Anand	Life Institutional member
5.	Zoological Survey of India Desert Regional Centre, Jhalamand P ali Road, Jodhpur 342005 Rajasthan	Annual member Converted to Institutional life member
6.	Conservator of Forests, North Kumaon Circle Uttarakhand, Almora 231099	Institutional Life member
7.	Director Nanda Devi Biosphere Reserve Gopeshwar Distt. Chamoli	" "
8.	Director Corbett Tiger Reserve Ramnagar, Distt. Naintial	" "
9.	Govt. Medical College Rampur Road, Haldwani Uttarakhand	Institutional Life Member

Illegal Sand quarrying poses threat to forest area

Massive illegal sand quarrying in the forest area in Chandigarh's periphery is resulting in several seasonal rivulets changing their tracks, making agricultural land and human settlements vulnerable to erosion. Truck loads of sand for construction and earth for brick-kilns are being removed without being checked by forest officials. The ecologically fragile forest area is locked under various provisions of the Forest Act. The activity gains importance in the context of the massive urbanization boom in Chandigarh's periphery.

Admitting that there were cases of quarrying in the area, Divisional Forest officer (DFO), Ropar, K. Kanan, said the department was seeking cooperation from the police and mining departments in controlling the activity. He informed that in the space of two days, two cases of illegal sand quarrying were detected and suitable action was being taken. A majority of quarrying takes place in different places spread across 15 km north of the city beyond the PGIMER.

After receiving regular complaints from villagers in the Kharar and Siswan forest ranges, a visit to the areas on Sunday revealed that right from Nayagoan-Nada area to Perch, Seonk, Jyanti Majri, Mullanpur, Kassauli, Parol, Nagal and Siswan Villages, the illegal operation has gained alarming proportions. The indiscriminate quarrying has left several 10 to 15 feet deep craters in the rivulets.

Last night, some inhabitants of Nagal village had caught a JCB (an excavating machine) red handed that was quarrying sand right beneath a bridge on the Chandigarh-Siswan road at Parol. Bhag Singh and Balwant Singh of Nagal Village said that a complaint about the active involvement of forest officials in illegal quarrying had been sent to the Principal Chief Conservator of Forest, Punjab, BC Bala.

Eager to make a fast buck, the operators of the illegal activity while using muscle power were going further deep into the forest area, eyeing even private land.

Quarrying for sand apart, the increasing demand for bricks has resulted in large-scale quarrying of earth to feed the brick-kilns in the Parol area. In several areas, privately owned hills have been badly cut to remove earth.

Source: The Tribune, May 22, 2010
Courtesy - RAJMEET SINGH

Widening of Roads
Hundreds of Chinar trees face the axe

Source: The Tribune, May 22, 2010.
Courtesy: Tejinder Singh Sodhi.

Even as World Forestry Day is being observed today, hundreds of Chinar trees in the Kashmir valley face the axe in the name of development.

With the state government undertaking a massive project of widening various roads, including the national highway and the Narbal Tangmarg Road, hundreds of chinar trees en

route will be axed.

A large number of these trees had been cut in the past to lay a railway line in the Kashmir Valley and now many more face a similar fate in the name of development.

"Chinar is the identity of the Kashmir valley. In the recent past, the number of such trees has dwindled considerably and instead of protecting these, the government would be cutting them," Nisar Ahmed, an environmental expert said. Recently the unscientific pruning of hundreds of chinar trees by the authorities of University of Kashmir on the Nasim Bagh campus of the university attracted a lot of criticism from various social circles and environmentalists.

Surveys conducted by the government and various NGOs have found that the number of Chinar trees in the Kashmir valley has decreased considerably. The grandeur of Chinar trees add to the beauty of the Kashmir Valley especially during autumn when the mighty trees shed leaves giving a fire like hue to the surroundings.

The government has undertaken the project to widen the roads from Srinagar to Tangmarg where the world famous tourist resort of Gulmarg is located. However, the state government says it has undertaken wide-scale plantation drive to save chinar trees.

"We have started a plantation drive to increase the number of chinar trees, which have been cut indiscriminately in the past two decades. The plantation drive, which was launched a few days ago, will continue till March 31," director of the Floriculture Department GS Sarwar Naqash said.

The Laki Eruption

Laki or Lakagigar (Craters of Laki) is a volcanic fissure situated in the south of Iceland. On 8 June 1783, a fissure with 130 craters opened with phreatomagmatic explosions, due to the interaction of the groundwater with the rising basalt magma. Although over a few days, the eruptions became less explosive, the eight month-long emission of sulphuric aerosols had adverse effects on the ecosystem. The eruption produced an estimated 14 cu km of basalt lava, and the total volume of tephra emitted was 0.91 cu km. Lava fountains were estimated to have reached heights of 800-1400 m. The eruption continued till 7 February 1784. But most of the lava erupted in the first five months.

The consequences for Iceland known as the Mist Hardships were catastrophic. An estimated 20%-25% of the population died due to famine and fluorine poisoning after the fissure eruptions ceased. About 80% of sheep, 50% of horses died because of dental and skeletal fluorosis from the eight million tons of hydrogen fluoride that was released.

The output of gases gave rise to what is known as the 'Laki haze' across Europe. According to sources, the sulphur dioxide released during the eruption amounted to about three times the total annual European industrial output in 2006! This outpour of sulphur dioxide caused a thick haze to spread across Western Europe, resulting in thousands of deaths throughout 1783 and the winter of 1784.

Source : Terra Green Vol3 Issue 3, June, 2010

Golden Mahseer faces extinction

The anglers meet that was held about a fortnight ago at Pong Dam reservoir has brought to the fore decline in Golden Mahseer population in the Beas.

The anglers who had gathered here, found it hard to find the famous game fish of Indian rivers in Pong reservoir.

While talking to The Tribune, K.B. Rahlan Secretary General of the Himachal Angling Association, said over the years the population and size of Golden Mahseer had been going down in the rivers of Himachal. The Government was not taking any step to check the declining population, he added.

He said in 1976, the National Commission on Agriculture, in its report under the fisheries chapter, pointed out the decline in Mahseer population all over the country. In 1978 immediately after its inception, the angling association had sought that Golden Mahseer should be included in the list of endangered species.

After hectic lobbying by environmentalists in 1990 the fish was declared as endangered species. However, neither the state nor the Union government took any serious step towards protecting Mahseer. As per data collected by the angling association, in the past 10 to 15 years, the appearance of Mahseer in the catches of local fishermen using cast nets had dipped to as low as 2 per cent.

The decline is more alarming due to the fact that scientists have not been able to breed the fish variety under controlled conditions as yet. The fisheries department of Palampur Agriculture University has been trying to breed Golden Mahseer under controlled conditions since long. However, the experiments have not yielded any results.

Fish experts revealed that construction of dams that had obstructed the smooth migration of Mahseer brooders, destruction of migratory routes and breeding grounds were the basic reasons for declining population of the fish.

Illegal mining from the rivulets has devastated the migratory routes and breeding grounds of the fish. During the upward journey to cold streams, brooders heavily loaded with eggs and slowly moving in shoals are easily killed with chemicals, leading to destruction of future population.

The state government should spread mass awareness regarding breeding routes of Mahseer fish. The rivulets that are being used as breeding routes by the Mahseer should be protected from mining activities.

The government should also fund a research project for producing Mahseer fingerlings in captivity so that they can be released in the wild to maintain the population the anglers demanded.

Source : The Tribune, March25, 2010
Courtesy : LALIT MOHAN

'Heavy Himalayan snowfall cause of drought in India' Reading University Study Explains Reason for Poor Monsoon

Ashish Ray/TNN

LONDON : Reading University, one of UK's leading research centres, claims to have solved a riddle that has perplexed scientists since the 19th century. An intensive study carried out by it has reached the conclusion that heavy snowfall over the Himalayas in winter and spring can be the direct cause of drought in india specially in the early part of the summer monsoon. Given that last winter was quite severe and mammoth quantities of snow may have fallen on the Himalayan range, all concerned in the Indian agrarian sector need to be vigilant about a delayed monsoon and plan accordingly. This is what the report appears to suggest. Dr. Andy Turner, lead author of the research at Walker Institute of the university said: "Our work shows how, in the absence of a strong influence from the tropical Pacific, snow conditions over the Himalayas and the Tibetan Plateau could be used to help forecast seasonal monsoon rainfall for India, particularly over northern India during the onset month of June."

These findings are highly significant because Indian agriculture is heavily dependent on early rainfall; a lack of this in the crucial growing season tends to have a devastating impact on crops, as was experienced last year. The work is a part of Reading's Climate Programme of the National Centre for Atmospheric Science (NCAS). Scientists have known since the 1980s that increased snow over the Himalayas can be linked with weaker summer monsoon rains in India. However, according to Reading, the mechanisms explaining this correlation have never been properly understood. The latest research shows that greater snowfall reflects more sunlight and produces a cooling over the Himalayas. This in turn means a weakening of the monsoon winds that bring rain to India.

The relationship is said to be strongest in the absence of warm (EI Nino) or cold (La Nina) environments in the tropical Pacific, since these are normally the dominant control factors over the Indian rains. A spokesperson for Reading University said its research is based on extensive experiments with the British Met Office/Hadley Centre climate model.

Source : The Times of India, April 24, 2010

Now, CO2 dump leagues under the sea?

Washington: In a novel way to fight global warming, scientists are trying how they could remove excess carbon dioxide from the atmosphere and store the gas deep under the sea bed where it can cause no trouble. Researchers at the University of Iceland are studying the possibility of sequestration of carbon dioxide (CO2) in basalt, a common extrusive volcanic rock that makes up most of the world's oceanic crust.

Sequestration is the carbon-capturing method which involves injecting the gas directly into underground geological formations. Oil fields, gas fields, saline formations, coal seams which cannot be mined, and saline-filled basalt formations have been suggested as storage sites.

Sigurdue Gislason, of University of Iceland, who is leading an international team of

scientists on the "Carbfix Project" for an Icelandic geothermal power plant, presented his findings at the annual Goldschmidt Conference at the University of Tennessee, Knoxville. Gislason's project aims at pumping carbon deep underground in southwest Iceland where it will mix with minerals and become rock.

The project involves capturing and separating flue gases at the Hellisheidi Geothermal Power Plant in Hengill, transporting the gas, dissolving it in water and injecting it at high pressures to a depth between 400 to 800 metres into a thick layer of basalt. Then the researchers will verify and monitor the storage. "If successful, the experiment will be scaled up and can be used wherever carbon dioxide is emitted." said Gislason.

"Currently carbon may be captured as a byproduct in processes such as petroleum refining. It can be stored in reservoirs, ocean water and mature oilfields."

Carbon sequestration is currently the most promising way to reduce greenhouse gases and Gislason's project is aimed at finding a storage solution that is long lasting, thermodynamically stable and environmentally benign.

The researchers said that the storage of CO_2 as solid magnesium carbonates or calcium carbonates deep underground in basaltic rocks may provide a long-term and thermodynamically stable solution.

However, many experts fear that CO_2 may leak over time.

Source: The Times of India, June 18, 2010

Whale poop curbs effects of warming

Paris: Southern Ocean sperm whales are an unexpected ally in the fight against global warming, removing the equivalent carbon emissions from 40,000 cars each year thanks to their faeces, a study has found.

The cetaceans have been previously figured as climate culprits because they breathe out carbon dioxide, the most common greenhouse gas. But this is only a part of the picture, according to the paper, published in the British journal proceedings of the Royal Society B.

Australian biologists estimated that the estimated 12,000 sperm whales in the Southern Ocean each defecate around 50 tons of iron into the sea every year after digesting the fish and squid they hunt. The iron is a terrific food for phytoplankton-marine plants that live near the ocean surface and which suck CO_2 from the atmosphere through photosynthesis.

Source: The Times of India, June18, 2010

No African Safari in Tiger Reserves

Nitin Sethi/TIN

New Delhi: The Environment and Forest Ministry has rejected a move by the tourism lobby to turn parts of tiger reserves and reserved forests into exclusive enclaves for high-end tourism.

The ministry has decided to nip the proposal in the bud, which emanated from Madhya Pradesh, with the tourism lobby asking that a patch of forest reserve be handed over to them to run as a South Africa-style safari where rich tourists can be catered. While the MP

government forest department had supported the proposal pushed by a group of tour companies Travel Operators for Tigers the union ministry has rejected it.

The tourism lobby was keen to go beyond the one case of Madhya Pradesh and wanted a policy change to assist such exclusive enclaves in forest areas all over the country. They had demanded a national experts' conference on the issue to promot their proposal. That too, the union environmental and forests ministry has refused to entertain.

Sources in the ministry said that the existing wildlife protection regulations do not provide for such commercial activities in the name of conservation so it had rejected the MP proposal as well as the demand to hold consultations on a policy change.

The pressure from the tourism lobby to open up forests to the lucrative 'wild life tourism' comes even after PM Manmohan Singh, as chairperson of the National Board for Wildlife, had written to select states asking that the CM intervene to reduce tourism pressure on high profile tiger, reserves.

Source: The Times of India, June18, 2010

Whale Study hints at menopause origin

London: The evolutionary mystery of menopause is a step closer to being solved thanks to research on killer whales.

A study by Cambridge and Exeter universities had found a link between killer whales, pilot whales and humans, the only three known species where females stop breeding relatively early in their lifespan.

Despite very different social structures between the species, the study, by Rufus Juhnstone of the department of zoology of Cambridge and Michael Cant of Exeter, shows that in each case females become increasingly genetically related to those they live with as they get older.

Because of this, there is a motivation for older females to do what is best for the survival of those around them. This creates a "grandmother" role, where the success rate of breeding in the group can be helped by older females sharing parenting knowledge and stopping breeding to allow younger females easier access to resources.

The research is the first to provide a plausible explanation as to why these species in particular are the only ones in which females finish reproduction while they still have decades left to live.

Cant, from the University of Exeter said, "Although the social behaviors of the three menopausal species are very different, there is a common link: their social systems mean females become more related to those around them as they get older".

Source: The Times of India, July 3, 2010

Leak Risk undermines CO2 capture: study

Paris: Dreams of braking global warming by storing carbon emissions from power plants could be undermined by the risk of leakage, according to a new study.

Rich countries have earmarked tens of billions of dollars of investment in carbon

capture and storage (CCS), a technology that is still only at an experimental stage. Under CCS, carbon dioxide (CO_2) would be snared at source from plants that are big burners of oil, gas and coal. Instead of being released into the atmosphere, where it would contribute to warming, the gas would be buried in the deep ocean or piped into underground chambers such as disused gas fields.

Critics say CCS could be dangerous if the stored gas returns to the atmosphere. They also argue that its financial cost, still unknown, could be far greater than tackling the source of the problem itself. The new research, published by the journal Nature Geo-Science, wades into the debate with an estimate of capturing enough carbon to help limit warming to two degrees Celsius, the figure set in last December's Copenhagen Accord.

Storing CO2 in the ocean will contribute to acidification of the sea, with dangers that reverberate up the food chain, says its author, Gary Shaffer, a professor at the Danish Centre for Earth System Science in Humlebaek, Denmark. It also carries a higher risk of being returned to the atmosphere by ocean currents and storms.

Underground storage is a better option, but only if the geological chamber does not have a significant leak or is breached by an earthquake or some other movement, says the research paper.

Source: The Times of India, June29, 2010

Young Reader's Section

कौन - सा जीव जीवन भर बिना पानी के रह सकता है?

सभी पेड-पौधों और जीव-जंतुओं को जीवित रहने के लिए पानी की आवश्यकता होती है। सारी उम्र बिना पानी पिए अथवा कभी-कभार पानी पीकर जीवित रहने की बात एकदम अविश्वसनीय लगती है। लेकिन एक जंतु ऐसा भी है, जो जीवन भर बिना पानी पिए रहता है। क्या तुम जानते हो कि वह कौन-सा जंतु है?

यह विचित्र जंतु है, उत्तरी अमेरिका के दक्षिण-पश्चिमी रेगिस्तानों में पाया जाने वाला कंगारू रैट (Kangaroo Rat)A इसकी टांगें व पूंछ आस्ट्रेलिया में पाए जाने वाले कंगारू से मिलती-जुलती हैं। इसके गालों के बाहर की तरफ थैलियां भी होती हैं। इन थैलियों में यह खाने का सामान लाता है और अपने बिलों में एकत्र करता है। इसीलिए इसे कंगारू रैट कहते हैं। यह भी कंगारू की ही तरह लम्बी छलांगें लगाता है और रेगिस्तान में उगने वाले कैक्टस के पौधों को आसानी से कूदकर पार कर जाता है।

अब यह प्रश्न उठता है कि यह बिना पानी पिए जीवित कैसे रहता है?वैसे तो रेगिस्तानों में वही जानवर और पेड-पौधे जीवित रह सकते हैं, जिन्हें पानी की बहुत कम आवश्यकता होती है। इस चूहे को तो पानी की बहुत ही कम आवश्यकता होती है और यह अपनी पानी की जरूरत रेगिस्तान में उगने वाले पेड-पौधों की जडों को खाकर पूरी कर लेता है। इन पेड-पौधों की जडों में कुछ न कुछ नमी अवश्य होती है। पानी की यही नमी इसको जिंदा रखने के लिए काफी है। इन्हीं जडों से यह अपनी भोजन की जरूरत भी पूरी कर लेता है।

Birds in Trouble

The Passenger Pigeon of America, The Dodo of Mauritius, the Labrador Duck of North America, The Pinheaded Duck of Eastern India, The Mountain Quail of Western Himalayas. What do these birds have in common? They are all believed to be extinct. That means that we will never see them again in real life.

Many birds and (other animals and plants) become extinct when they cannot adapt to changing conditions such as ice ages, volcanic eruptions, and natural competition from other species. Trilobites, dinosaurs, saber-toothed cats, woolly mammoths, and many other animals have become extinct due to natural causes.

But in the last 300 years, over 87 species of birds have become extinct from the world, and during last 100 years two birds have disappeared from India not from natural causes but because of people's actions.

Here are some of the main reasons why so many birds have disappeared, and why so many birds are in trouble today.

If, for some reason, there is a decrease in the area available to resident birds to carry out their activities of feeding, roosting, breeding and rearing their young ones, this could threaten the very existence of those birds. This can happen in many ways, several of which are related to the increase in human population and needs.

Habitat Destruction

Each year lakhs of hectares of bird habitat become buildings, roads and factories. Cutting of big old trees results in paucity of nesting sites for birds such as Pied Hornbills and large Owls. Huge dams engulf extensive areas. Forests are cleared for plantations or for cultivation of other cash crops. These changes and developments result in destroying and decreasing bird habitat.

The Great Indian Bustard is today greatly endangered due to the loss and disturbance of its grassland habitat due to the pressures of increasing human and cattle population. The White winged Wood Duck is nearing extinction because of the continuous encroachment into its swampy forest habitat in Assam and eastern India.

Feather, Skin and Beaks for Sale

Peacock, egret, and ostrich feathers; Bird of Paradise skins and feathers; eagle feathers and talons, ground-up hornbill beaks and other bird parts have often been over collected in the past, causing many bird populations to decline. In spite of the ban imposed by several countries on import and export of bird products these are still being sold illegally in countries all over the world.

Illegal Pet Trading

Every year thousands of parrots, cockatoos, lovebirds, lorikeets, macaws and other parrot like birds are transported illegally form their homes in the wild and sold as pets in other countries. To smuggle them in, illegal traders often stuff the birds into socks, car seats and other concealed places. Many of these smuggled birds die en route due to suffocation, starvation or thirst. It is alleged that for every bird that survives to become a pet, perhaps ten

die. In many areas illegal pet traffic is threatening already endangered tropical bird populations.

Lead Shot Poisoning

In countries like U.S.A, Canada or those of Europe, where shooting of birds is carried on either as sport or for meat, water-birds, especially, face a considerable hazard of lead-poisoning. This occurs when they accidently eat "spent" lead shots lying at the bottom of lakes and ponds.

Hunting for Sport

Although this is forbidden by law in India, illegal hunting continues. The Houbara Bustard, is endangered in the Indian Subcontinent as it is a great favorite with Arabs who hunt these with trained falcons. Blacknecked Cranes, once protected by the local people in Arunachal Pradesh, have nearly disappeared due to hunting.

Poaching

India faces a major problem of poaching which is the illegal or clandestine killing of birds. There is a complete ban in our country on killing certain species of birds such as the Great Indian Bustard. But inspite of laws, illegal shooting goes on. Only legal constraints are not enough to prevent this. What is more important is strict implementation of the provisions of laws. In such a vast country, the government alone can not cope with the problem of poaching. People should come forward to protect our birds and wildlife. For example, the local people of some parts of Saurasthra and Gujarat and Rajasthan, voluntarily and actively oppose the so called sportsmen when they come to shoot birds in their areas.

Rats, Cats, Pig.... on the Loose

Introducing animals from one place to another can often upset the natural balance in a habitat. On many islands, introduced animals such as rats, cats, pigs and mongooses have killed ground nesting and flightless birds, and gobbled up their eggs, As a result, many of these island birds have become extinct.

Introduced birds too, can cause problems, for example the introduction of Common Myna into Mauritius Island has proved detrimental to some of the local bird species there. On the other hand peacock, introduced in Port Blair and elsewhere in Andaman Islands has thrived there, however without any ill effects on the local fauna so far.

Pesticides Linger on

DDT and other deadly pesticides have caused many bird populations to decline in the last fifty years. Eagles, hawks and other birds of prey are especially susceptible to pesticide poisoning.

Spraying of DDT and other insecticides in agriculture kills the insects which are the food for many birds. Such insects do not directly kill the bird. The DDT however does not pass out in the excreta of birds, but is stored in their flesh. This ultimately finds its way to the birds of prey which are at the apex of the food chain in the bird world. One of the effects of such poisoning of the predatory birds is the thinning out of their egg shells. Such eggs are easily damaged, reducing their chances of hatching. The result is that there is a great decline in the

number of birds of prey.

Because of a ban on the use of DDT in some developed countries of Europe and America, the number of birds of prey there is slowly increasing. Many advanced countries of the west have put a ban on the manufacture and or use of DDT within their borders. But many other industrialized ones manufacture DDT, and other banned pesticides etc. for export to underdeveloped countries. Such pesticides are being used indiscriminately in agriculture in large quantities. This poses the danger of poisoning not only to resident birds but also to some of the migratory birds that live in other countries for part of the year.

Pollution Problems

Oil spills and dumping of hazardous chemicals have killed thousands of birds, especially those living on or near water. The untreated effluent of many industries which is discharged in rivers, gutters, estuaries and the sea, harms not only aquatic life, but also many species of water birds. When aquatic birds like cormorants, dives, ducks or penguins come in contact with such polluted water, their feathers get smeared with the sticky oil. Such birds are then unable to fly, and ultimately die.

This also happens when great oil tankers meet with accidents and get wrecked in mid ocean spilling their oil cargo over vast areas of water. During the Gulf war in 1991, Iran released vast quantities of oil in the Persian Gulf. Hundreds of thousands of birds died due to the oil soaked waters.

How to Help

Although many birds are facing big problems due to the reasons described here, and other threats, there are many ways in which people can give birds the helping hand they need. Here are some ideas:

Learn more About Birds: The more you know about birds the more you can help them. The best way to know more is to take interest in identifying common birds found around you. The interest will then generate love for the birds and the love in turn will generate concern for their well being. Read about the problems faced by birds, and get involved in finding solutions. You can form a nature club in your school, or join a local conservation group. Find out knowledgeable bird watchers in your area, join in bird watching excursions and get acquainted with birds.

Building Nest Boxes: Many cavity nesters such as the Brahminy Mynas, The Indian Robins, the Magpie-Robins, Tits, Nuthatches, the Barn Owl will surely benefit by nest boxes.

Garden for the Birds: You can attract more birds to your backyard or community by planting trees, shrubs, and wildflowers: fig trees such as Banyan, flowering trees like the Silk Cotton, Drumstick, Indian Coral tree and fruit trees such as Mulberry. These would provide food and shelter for the birds that live in your land so as to leave protected hedgerows and dead tree "snags" for nest site and shelter.

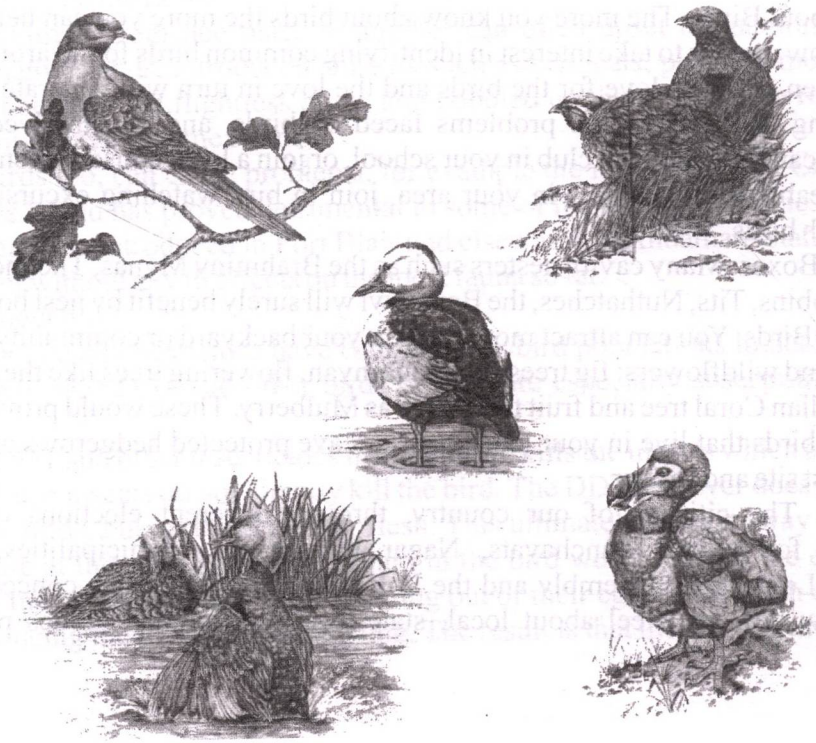
Write Letters: The citizens of our country, through different elections choose their representative for Village Panchayats, Nagar Panchayats, Municipalities, Municipal Corporations, Legislative Assembly and the Lok Sabha. By letting the concerned elected members know how you feel about local, state-level and national issues pertaining to

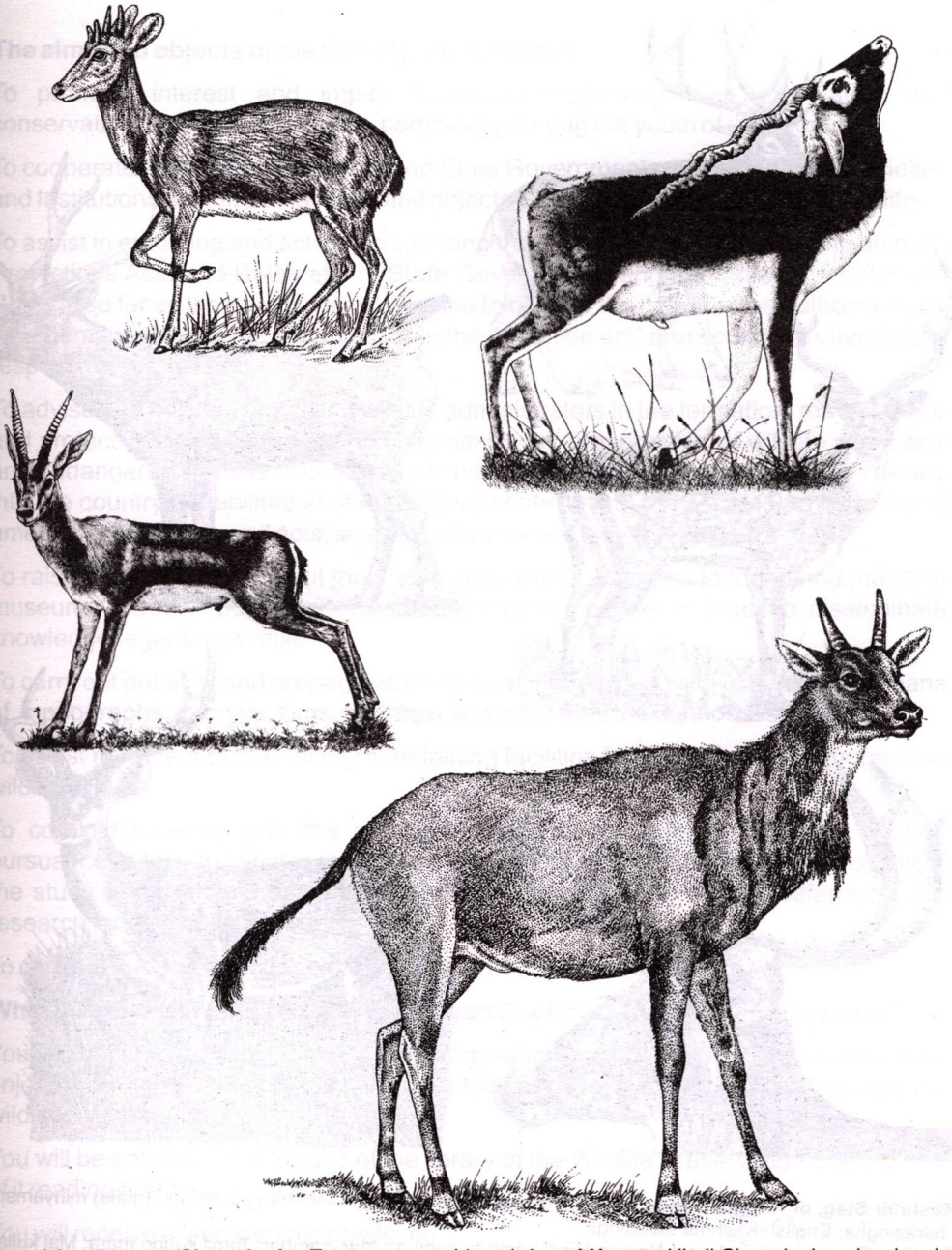
wildlife, conservation, pollution and ecology, you can influence how they vote on those issues. Also focus you attention on state and local level bird issues and ways to protect habitat in your area. For example, you can raise you voice against reclamation of small tanks, clearing of scrub lands, cutting of old trees or tree-groves, dumping of hazardous wastes in water bodies or waste lands etc.

Get involved in national issues. Study Wildlife Preservation Act, Forest Act etc.

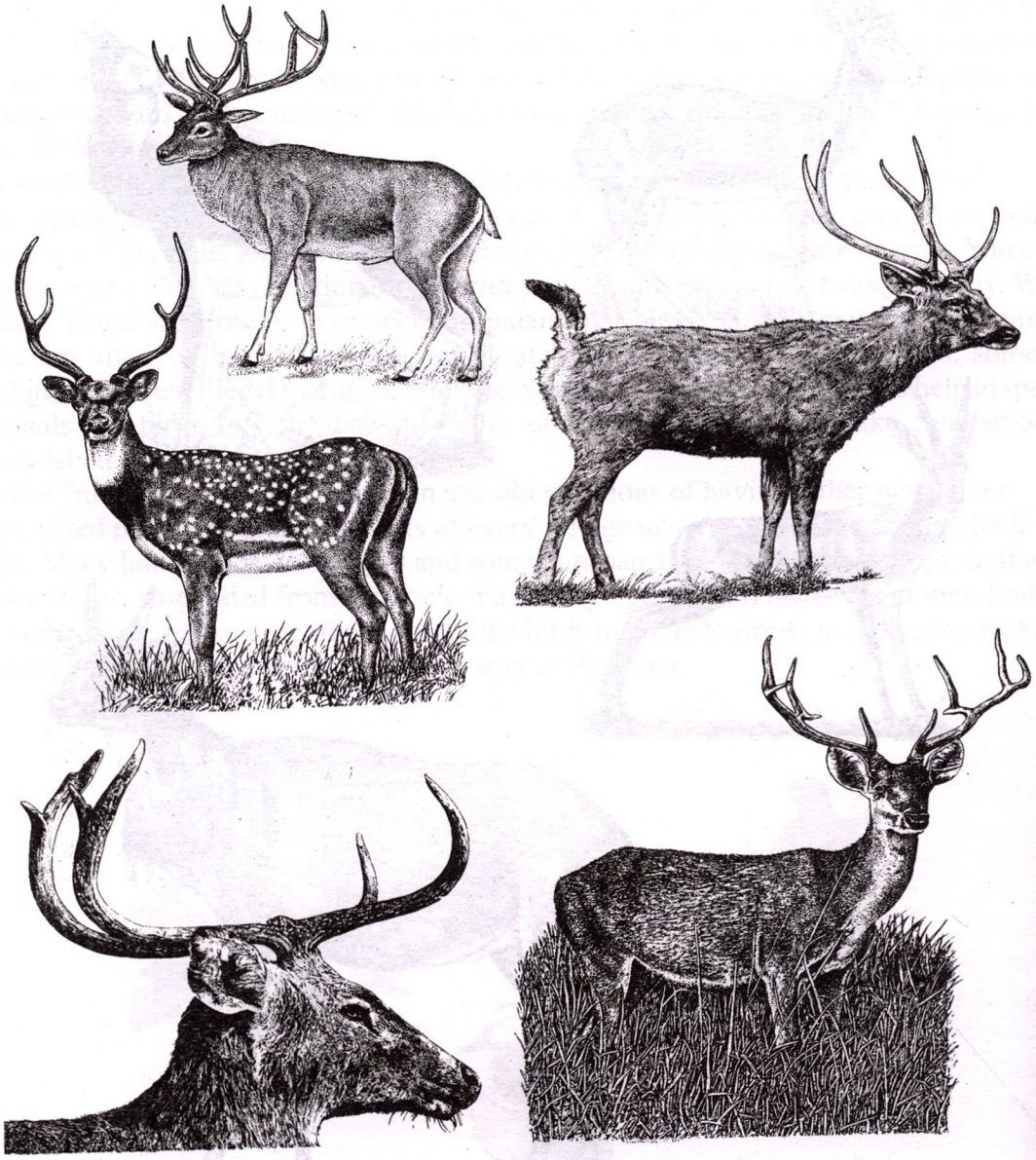
Join Groups and Projects That Help Protect Birds and Habitats: Your group can find out about, and if possible, join local nature clubs or environmental protection groups. You could also become a member of national institutions like Bombay Natural History Society, WWF (India). These are striving to protect our endangered birds, animals and the environment; some are involved in captive breeding of such endangered birds in the zoos; some are working to prevent illegal trading in birds etc. Students could also volunteer to help in special hospitals for birds like the one in Delhi, or a small animal park like Sundarvan in Ahmadabad.

Revive Traditions: In India there is an age old traditions of having either wooden or constructed platforms at the outskirts of every village to serve as a large feeding table for birds. Many households, in villages and some in urban areas still keep water in shallow earthen trays, suspended from a branch of a nearby tree or from the eaves of their houses for birds. In the hot summer these attract the birds to come to drink, as well as to bathe. This tradition is worth continuing in one way or the other.





The Fourhorned Antelope, or Chowsingha *Tetracerus quadricornis* **Local Name**s. Hindi Chowsingha, chowka, doda; tamil nari komboo marn; Kan. koondoo kooree poki.
The Blackbuck, or Indian Antelop *Antilope cervicapra* **Local Names**. Sanskrit ena (male, harina (female), mriga; Hindi harna (male), Harni (female), kalwit (female) Mrig; Mar, haran, kalsit (male); Tamil moorukoo marn; Kan. hoola kerra; Tel. jinko
The Chinkara, or Indian Gazelle *Gazella gazella* **Locai Names** Hindi Chinkara, Kal punch; Tel burra jinka
The Nilgai, or Blue Bull *Boselaphus tragocamelus* **Local Names** hindi Nil, nilgai, rojh, roz, rojro; Mar rohu, nilgai nil(



The Kashmir Stag, or Hangul *Cervus elaphus hanglu* **Local Names**. Kash. hangal, honglu (male) minyamar (female). Hindi barasingha; English Kashmir barasingh.
The Sambar *Cervus unicolor* **Local Names** Hindi sambar, sambar; Mar. sambar; Tamil kudoo mara; Mal kullay marn; Kan. kudawe kaddama; Bur. sut.
The Chital, orSpotted Deer *Axis axis* **Local Names** Hindi chital, chitra, jhank; Mar. chital Tamil & Mal. poolt marn; Kan. saranga jinke
The Thamin, or Brow antlered Deer *Cervus eldi* **Local Names**. Manipur sangal; Bur. tamin.
The Swamp Deer, or Barasingha *Cervus duvauceli* **Local Names** Hindi barashigha, maha; Nepal Terai gonda, ggonr, ghos; Central India goinjak (male), gaoni (female), sal samar, nerwari.

The Wildlife Preservation Society of India

1. The aims and objects of the Society are as follows :-

(a) To promote interest and impart knowledge regarding the preservation and conservation of all forms of wildlife, particularly among the youth of the country.

(b) To cooperate with the Govt. of India and State Governments and with others Societies and Institutions having similar aims and objects in working for the interests of wildlife.

(c) To assist in enforcing and actively supporting the Forests Acts. Wild Birds and animals Protections Acts and Rules etc. of State Governments and the Indian Arms Act and Rules in so far as they pertain to wildlife and to bring to the notice of the authorities any infringement of the same and to assist in the detention and prosecution of offenders in respect of such laws.

(d) To advise and help the Govt. and wildlife administrators in the formation, maintenance and protection of Sanctuaries and National Parks, preservation of wildlife in general and endangered species of India in particular and in the introduction of exotic species into the country, rehabilitation of endangered species etc. and in the formulation and amendments of rules and acts, so as to conserve and increase wildlife stocks.

(e) To raise funds for carrying out the above aims and objects and to found and maintain museums reading rooms and libraries of natural history in order to disseminate knowledge regarding wildlife.

(f) To carry out publicity and propaganda for the preservation of wildlife in India by means of monographs, journals, films, filmstrips and other feasible methods.

(g) To assist members of the Society in obtaining facilities for viewing and photographing wildlife in India.

(h) To conduct research into the problem of Wildlife management in India, and in pursuance of this, to initiate, encourage and, where possible assist in the projects of the study of threatened species and related objects and to provide reference and research facilities for such work.

(i) To carry on such other activities which will serve the above subjects.

2. What membership of Wildlife Preservation Society of India will entitle you to ?

(1) You will become an active member of the growing group of Wildlife enthusiasts, who enjoy working for and spreading the knowledge of how to conserve India's heritage of wildlife for posterity.

(2) You will be entitled to the full use of the library of the Wildlife Preservation Society and of it reading room.

(3) You will receive a membership certificate.

(4) You will receive a personal Identification and Membership Card.

(5) You will be entitled to buy all publications of the Society at a concessional rate.

(6) You will be entitled to buy at concessional rates the Societies Greeting Cards, Calendars. Tie, Label badges and the Balance of Nature Game (specially Published in colour for its educative and recreational values).

(7) You will be supplied "Cheetal", the quarterly journal of the society free.

3. For membership particulars write to Honorary Secretary, Wildlife Preservation Society of India 7 Astley Hall, Dehra Dun.

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Edited by A.S. Negi,Purva Mehta and Dr. S.P. Singh, published by President for the Wildlife Preservation Society of India 7, Astley Hall, Dehradun and Printed by Sourabh Upadhyay at Ankan, 34, Karanpur, Dehradun.Phone : 2657336